

REMARKS

Please note that a supplemental Information Disclosure Statement under 37 C.F.R. § 1.97(c), along with the appropriate fee as set forth in 37 C.F.R. § 1.17(p), and a copy of each non-U.S. patent document cited therein, accompanies this Response. Applicant respectfully requests that the Examiner consider the documents cited in the accompanying Information Disclosure Statement and indicate to the Applicant's undersigned attorney that such documents have been considered.

In the Office Action of June 30, 2005, pending Claims 1, 2, 6-10, and 16-19 as originally filed were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,935,737 to Yan. The Applicant respectfully requests that this rejection of the claims be reconsidered in view of the foregoing amendment of the claims and the arguments which follow. As will be discussed in more detail below, it is respectfully submitted that Yan does not describe or suggest the specific features of the invention as reflected in the claims, as amended.

It is first respectfully noted that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Also, the identical invention must be shown in as complete detail in the cited reference as is contained in the claim. (*See* MPEP 2131.)

Claim 1 of the present application is drawn to a method for detecting defects in a lithography mask blank. Claim 1 features the steps of: (a) applying a photoresist layer to the mask blank, (b) exposing the photoresist layer with radiation having a wavelength and angle of incidence such that the photoresist layer is fully exposed by the combination of direct and reflected radiation in areas of the mask blank in which there are no defects, (c) developing the exposed photoresist layer to remove the fully exposed photoresist from the mask blank, and (d) detecting photoresist remaining on the mask blank after development of the photoresist layer to detect defects in the mask blank.

In accordance with the foregoing amendment of the claims, Claim 1 has been amended to clarify that the photoresist layer is applied directly onto a reflective surface of the mask blank. Claim 1 has also been amended to clarify that the photoresist layer is fully exposed by a combination of direct radiation and radiation reflected from the mask blank onto the photoresist layer. It is respectfully submitted that these amendments are fully supported by the application specification as originally filed. (*See* e.g., paragraphs [0024], [0026], [0027], and Fig. 4 of the application specification as originally filed.)

Thus, Claim 1, as amended, is drawn to a method for detecting defects in a lithography mask blank in which a photoresist layer is applied directly onto a reflective surface of the mask blank and in which the photoresist layer is exposed to radiation such that the photoresist layer is exposed by both direct radiation and reflected radiation from the mask blank. In areas of the mask blank in which there are no defects the photoresist layer is thus fully exposed. However, in areas of the mask blank in which there are defects the reflected radiation from the mask blank will be attenuated, thus reducing the exposure of the photoresist layer. Thus, when the exposed photoresist layer is developed, the exposed photoresist layer will only be removed fully in areas of the mask blank in which there are no defects. After development, photoresist will remain on the surface in areas of the mask blank corresponding to defects therein. This remaining photoresist may then be detected to detect the underlying defects in the mask blank.

Yan describes a method for eliminating mask repairs in the reflector region of a photolithography mask. The fabrication of a photolithography mask begins with a resonant reflector substrate having a reflective layer or coating. First and second defect absorbing layers cover the substrate. The second defect absorbing layer is applied onto the reflective layer or coating, the first defect absorbing layer is applied onto the second defect absorbing layer. (The first and second defect absorbing layers are made of different materials so that they may be etched selectively with respect to each other and to the underlying substrate.) The first defect absorbing layer is covered with a photoresist. The photoresist is patterned, e.g., by scanning with a controlled electron beam, and developed to create the desired mask pattern therein. The photoresist pattern is transferred to the first defect-absorbing layer through plasma etching. Any defects arising from the etching step are repaired. The repairs may cause remnants or stains, but these are in the second defect absorbing layer. The pattern formed in the first defect absorbing layer is transferred to the second defect absorbing layer, using the first defect absorbing layer as a mask. Any defects arising from this etching step are repaired. This repair step may also result in a remnant or stain, but only in areas of the reflector substrate that are to be covered by an absorber material and thus which will not be used to reflect light during the use of the mask thus formed. The absorber layer is deposited into the etched open areas of the first and second defect absorbing layers. The absorber layer is planarized, and the remaining defect absorbing layers are removed, thereby removing any repair remnants in those layers as well. The remaining mask structure consists of the substrate with a patterned absorber layer.

Note that Yan does not describe or suggest a method for detecting defects in a lithography mask blank. Rather, Yan describes a method to correct defects that may occur during patterning of a mask. More specifically, Yan does not describe or suggest applying a photoresist directly onto the reflective surface of the mask blank. Rather, Yan describes applying a photoresist onto two underlying defect absorbing layers, which are positioned between the reflective surface of the mask blank and the photoresist layer. Thus, Yan does not describe or suggest exposing the photoresist layer by both direct radiation and reflected radiation from the mask blank. Since Yan does not describe or suggest applying the photoresist layer directly onto the reflective surface of the mask blank, there can be no exposure of the photoresist layer mentioned in Yan via a reflection from the reflective surface of the mask blank. Thus, it is respectfully submitted that Yan does not describe or suggest a method for detecting defects in a lithography mask blank as featured in Claim 1 of the present application, as amended. More specifically, Yan does not describe or suggest the steps of applying a photoresist layer directly onto the reflective surface of a mask blank or of exposing the photoresist layer such that the photoresist layer is fully exposed by the combination of direct radiation and reflected radiation from the mask blank, as also featured in Claim 1, as amended.

For the foregoing reasons, it is respectfully submitted that Claim 1, as amended, is not anticipated by, or unpatentably obvious over, Yan, and is, therefore, in condition for allowance. Claims 2-10 depend, either directly or indirectly, from Claim 1, as amended, and incorporate the features thereof. Therefore, it is respectfully submitted that these dependent Claims 2-10 also are not anticipated by, or unpatentably obvious over, Yan, and are, therefore, also in condition for allowance.

Independent Claim 16 of the present application is drawn to a method for detecting defects in a reflective material. Claim 16 features the steps of (a) applying a photoresist layer to the reflective material, (b) exposing the photoresist layer with radiation having a wavelength and angle of incidence such that the photoresist layer is fully exposed by the combination of direct and reflected radiation in areas of the reflective material in which there are no defects, (c) developing the exposed photoresist layer to remove the fully exposed photoresist from the reflective material, and (d) detecting photoresist remaining on the reflective material after development of the photoresist layer to detect defects in the reflective material. By the foregoing amendment of the claims, Claim 16 has been amended, in a manner similar to independent Claim 1, to clarify that the photoresist layer is applied directly onto a reflective surface of the reflective material, and that the photoresist layer is fully

exposed by the combination of both direct radiation and radiation reflected from the reflective surface in areas of the reflective material in which there are no defects.

As discussed above, it is respectfully submitted that Yan does not describe or suggest a method for detecting defects in a reflective material. Rather, Yan describes a method that may be used to correct defects occurring during the patterning of a reflective material such as a lithography mask. Furthermore, as also discussed above, Yan does not describe or suggest applying a photoresist layer directly onto a reflective surface of a reflective material or exposing the photoresist layer with radiation such that the photoresist layer is fully exposed by the combination of direct radiation and reflected radiation from the reflective surface, as featured in Claim 16, as amended.

Therefore, for the reasons discussed above with reference to Claim 1, it is respectfully submitted that Claim 16, as amended, also is not anticipated by, or unpatentably obvious over, Yan, and is, therefore, also in condition for allowance. Dependent Claims 17-21 depend, either directly or indirectly, from Claim 16, as amended, and incorporate the features thereof. Therefore, it is respectfully submitted that these dependent Claims 17-21 also are not anticipated by, or unpatentably obvious over, the cited references and are, therefore, also in condition for allowance.

In the Office Action Claims 11-15 and 22-23 as originally filed were indicated allowed.

For the foregoing reasons, it is respectfully submitted that all of the pending Claims 1-23 as originally filed and/or as amended herein are in condition for allowance. Favorable action on the present application is, therefore, respectfully requested.

Respectfully submitted,



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